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09/889,705	09/19/2001	Robert W. Griffiths	1160-3912.1U	7403

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EXAMINER	
JACKSON, ANDRE K	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/889,705	GRIFFITHS ET AL.	
	Examiner	Art Unit	
	André K. Jackson	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,16-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-6,13,14,16,17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al. in view of Oota et al.

Regarding claim 1, Cohen et al. disclose a "Capacitance-type fluid level sensor for i.v. and catheter bags" which has a sensor with mutually cooperative first and second electrodes (10,12) arranged on the container in isolation from the interior of the container and having a vertical dimension and a horizontal dimension (Figures 2 and 7). Cohen et al. disclose where a majority of their areas are vertically and horizontally offset from each other in two embodiments (Figures 2 and 7). In Figure 3, Cohen shows where the electrodes are vertically offset and where a portion of the electrodes is overlapping. Cohen teaches that the electrodes are placed in an array to detect a specific liquid level (Columns 11 and 12). Oota et al. disclose in "Liquid level and quantity measuring apparatus" where the electrodes are placed where a majority of their

areas are vertically and horizontally offset (zig-zagged) from each other (Figure 1A). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cohen et al. to include where a majority of their areas are vertically and horizontally offset as taught by Oota et al. By adding this feature the artisan would be able to precisely detect the liquid level when the liquid is between two of the minor overlapping electrodes.

Regarding claim 2, Cohen et al. and Oota et al. disclose where the first and second electrodes are substantially vertically and horizontally offset from each other (Figures 2 and 7 and 1A) respectively.

Regarding claim 3, Cohen et al. and Oota et al. disclose where the first and second electrodes are completely vertically and horizontally offset from each other (Figures 2 and 7 and 1A) respectively.

Regarding claim 4, Cohen et al. and Oota et al. disclose where the first and second electrodes are vertically spaced from each other (Figures 7 and 1A) respectively.

Regarding claim 5, Cohen et al. and Oota et al. disclose where the electrodes comprise substantially two-dimensional plates (Figures 2 and 1A) respectively.

Regarding claim 6, Cohen et al. disclose where a conductor is coupled to first and second electrodes (Figure 1).

Regarding claim 13, Cohen et al. and Oota et al. disclose at least one alarm responsive to an output signal from the sensor (74) and (Column 3) respectively.

Regarding claim 14, Cohen et al. and Oota et al. disclose where the electrodes are horizontally spaced (Figures 7 and 1A) respectively.

Regarding claim 16, Cohen et al. disclose where the first and second electrodes are placed on a wall of the container (Figure 1).

Regarding claim 17, Cohen et al. disclose a mounting structure can be used to affix the first and second electrodes (Column 2).

Regarding claim 20, Cohen et al. disclose where the electrodes are placed within the wall of the container (Column 4, lines 66-67 and column 5, line 1).

3. Claims 7,8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al. in view of Oota et al. as applied to claim 1 above Larson.

Regarding claim 7, Cohen et al. does not disclose where the conductors are connected to control circuitry. However, Larson discloses an "Apparatus for determining the liquid level in a tank" which teaches where the conductors are connected to control circuitry (Figures 1-2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cohen et al. to include where the conductors are connected to control circuitry as taught by Larson. By

adding the circuitry the user would be able to regulate the frequency of the circuitry for measuring the amount of fluid in the container.

Regarding claim 8, it is considered a design choice and well within the purview of the skilled artisan to include a "ZIF" connector. Various connectors can be substituted to increase the signal and decrease unwanted noise in the invention.

Regarding claim 12, Cohen et al. does not disclose a control circuitry that is configured to detect a change in capacitance of the sensor. However, Larson discloses control circuitry configured to detect a change in capacitance of the sensor (Figure 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Cohen et al. to include control circuitry configured to detect a change in capacitance of the sensor as taught by Larson. By adding this feature the artisan would be able to change the capacitance to continuously monitor fluid level.

4. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al. in view of Oota et al. as applied to claim 1 above in view of Hannan et al.

Regarding claims 9,10 and 11, Cohen et al. does not disclose where the control circuitry is configured to supply an oscillating signal having a frequency greater than 1MHz, at least 4MHz and at least 8MHz to one of the electrodes. However, Hannan et al. disclose a "Digital liquid

level sensing apparatus" which has control circuitry configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes (Column 5, lines 31-34;Column7, lines 7-37;Column 9). Therefore, to modify Cohen et al. to include where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes would have been obvious to one of ordinary skill in the art at the time of invention as taught by Hannan et al. since varying the frequency near the upper range gives better results.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al. in view of Oota et al. as applied to claim 1 above Jackson.

Regarding claim 18, Cohen et al. does not disclose where the mounting structure is a thin electrically insulative film. However, Jackson discloses a "Liquid level sensor and electrode assembly therefore" which teaches mounting structure is a thin electrically insulative film (Column 8, line 36). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Cohen et al. to include where the mounting structure is a thin electrically insulative film as taught by Jackson. Adding the film makes it easier for the sensors to stay in place when attached to an i.v. bag.

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al. in view of Oota et al. and Jackson as applied to claim 18 above, and further in view of Paglione.

Regarding claim 19, neither Cohen et al., Oota et al. nor Jackson discloses where the thin electrically insulative film is Mylar. However, Paglione discloses a "Method and apparatus for detecting liquid composition and actual liquid level" which has a thin electrically insulative film is Mylar (Column 6, lines 25-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify Cohen et al. to include where the thin electrically insulative film is Mylar as taught by Paglione since mylar is flexible and ideal to use with flexible containers.

7. Claims 21-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al. in view of Oota et al. and Hannan et al.

Regarding claim 21, Cohen et al. disclose a sensor with first and second electrodes arranged on the wall of the container in isolation from the interior of the container and having a vertical dimension and a horizontal dimension, where a majority of their areas are vertically and horizontally offset from each other (10,12 Figures 2 and 7). Cohen et al. disclose where a majority of their areas are vertically and horizontally offset from each other in two embodiments (Figures 2 and 7). In Figure 3, Cohen shows where the electrodes are vertically offset and where a

portion of the electrodes is overlapping. Cohen et al. teaches that the electrodes are placed in that array to detect a specific liquid level (Columns 11 and 12). Oota et al. disclose where the electrodes are placed where a majority of their areas are vertically and horizontally offset (zig-zagged) from each other (Figure 1A). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cohen to include where a majority of their areas are vertically and horizontally offset as taught by Oota et al. By adding this feature the artisan would be able to precisely detect the liquid level when the fluid is in between two minor overlapping electrodes. Cohen et al. does not disclose where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes. However, Hannan et al. disclose where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes (Column 5, lines 31-34;Column7, lines 7-37;Column 9). Therefore, to modify Cohen et al. to include where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes would have been obvious to one of ordinary skill in the art at the time of invention as taught by Hannan et al. since varying the frequency near the upper range gives better results.

Cohen et al. disclose adjusting a fluid level within the container (Column 11, line 15).

Regarding claim 22, Cohen et al. disclose where the electrodes are placed within the wall of the container (Column 4, lines 66-67 and column 5, line 1).

Regarding claims 23 and 24, Cohen et al. does not disclose where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes. However, Hannan et al. disclose where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes (Column 5, lines 31-34;Column7, lines 7-37;Column 9). Therefore, to modify Cohen et al. to include where the control circuitry is configured to supply a signal having a frequency greater than 1MHz, at least 4 MHz and at least 8MHz to one of the electrodes would have been obvious to one of ordinary skill in the art at the time of invention as taught by Hannan et al. since varying the frequency near the upper range gives better results.

Regarding claim 25, Cohen et al. disclose where the first and second electrodes are placed on a wall of the container with adhesive (Column 2, line 59).

Regarding claim 26, Cohen et al. disclose forming the capacitive structure on the wall (Figure 1).

Regarding claims 27 and 28, Cohen et al. disclose where the output signal exceeds a reference signal and an alarm is initiated once the output signal exceeds the reference signal (Column 5, lines16-28).

Response to Arguments

8. Applicants' arguments filed 02/24/04 have been fully considered but they are not persuasive.

Applicants argue that the electrodes of Cohen et al. and Oota et al. do not disclose horizontal and vertical offset electrodes. The claim recites 2 electrodes mutually cooperative in which Cohen et al. shows two electrodes mutually cooperative where a majority of their areas are horizontally offset (Figure 2) and the majority of their areas are vertically offset (Figure 7). Cohen et al. also places the electrodes in a pattern to determine a plurality of fluid levels (Figure 6). In that figure, (Figure 6, Cohen et al.) the plates 80 and 82 are placed in a pattern that would make it possible to detect discrete levels of fluid. Meanwhile, Oota et al. shows a placement of electrodes in a partly overlapped arrangement or in a zig-zagged way (electrodes 21a-21n as explained by the Applicant are in individual cooperation with one another) for the same reason as described by Cohen et al. Placement of the electrodes in this vertical (Cohen et al. Figures 7,8) (Oota et al. Figures 1A, 2A) and horizontal offset (Cohen et al. Figures 2,3,6) (Oota et al. Figures 1A, 2A) fashion is shown and known

by both Cohen et al. and Oota et al. In response to applicants' argument that due to difference in structure and operation between Cohen et al. and Oota et al. the references cannot be combined, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Applicants argue that Jackson does not teach a thin insulative film mounting structure for the electrodes. Jackson discloses where a thin insulative film is placed on the container at the location where the electrodes would be attached. At that point that film becomes a mounting structure since it has to adhere to the container and support the electrodes from falling off of the container.

Applicants argue that since Cohen et al. and Jackson both disclose electrodes on the exterior of the container that the combination of Paglione with the references would not be allowed since Paglione employs electrodes disposed within a tank. Cohen et al. disclose in Figure 12 that the electrodes can be placed within a container. Therefore, it would be well within the purview of the skilled artisan to combine the references.

Applicants have argued that the DC pulses are not oscillating signals. However, it is well known in the art to have one in place of the other. The artisan knows how the change in signal would influence the output of the device. For instance, Kelly (6018247) discloses in the patent entitled "Time domain reflectometer linear position sensing" where the pulse signal is converted to an oscillating signal (Column 2, lines 47-55). This shows that it is possible to use DC pulses for oscillating signals as evidenced by Kelly. Meanwhile, Matzuk discloses in the patent entitled "Ultrasonic scanning apparatus" where oscillations are converted to a pulse signal (Column 16, lines 14-29). This shows that it is possible to use oscillating signals for pulses as evidenced by Matzuk.

Regarding claim 29, Cohen et al. disclose where the alarm is a visual alarm (Column 2).

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (571) 272-2196. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.J.

April 30, 2004

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